

MISSOURI CONSERVATIONIST

VOLUME 81, ISSUE 1, JANUARY 2020
SERVING NATURE & YOU



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TO GET OUTSIDE

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MISSOURI DEPARTMENT OF CONSERVATION

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MISSOURI CONSERVATIONIST



ON THE COVER

Snow-covered sycamore
trees at Painted Rock
Conservation Area

DAVID STONNER

120-300mm lens, f/5.6
1/500 sec, ISO 400

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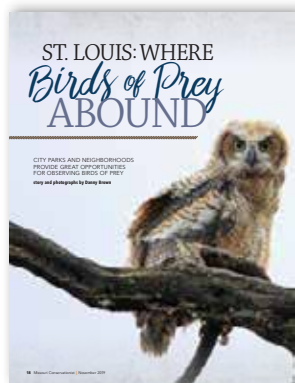
Inbox



Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email Magazine@mdc.mo.gov or write to us:

MISSOURI
CONSERVATIONIST
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JEFFERSON CITY, MO 65102



BIRDS OF PREY
Wonderful, page after page of amazing pictures and great close-ups [November, Page 18]. Thank you! I couldn't have enjoyed it more, and I will keep this month's issue to look at many times.

M. Hardie
St. Louis

MORE PRAISE FOR BIRDS OF PREY

I received my November copy of the *Missouri Conservationist*, and I enjoyed reading *St. Louis: Where Birds of Prey Abound* [Page 18]. I had no idea St. Louis was a stopping point for so many beautiful raptors. I will be sure to look for them! Thank you for your conservation efforts in Missouri.

Jan Edmondson Wentzville

As a Missourian from Mokane, raised on fishing and hunting and then departing for a life in the Navy and elsewhere, I have followed the *Missouri Conservationist* vicariously through my parents. I have followed Danny Brown and Noppadol Paothong's work in your magazine for years. They both do spectacular work, and Danny's shots in the *Birds of Prey* article in the November issue blew me away. Their work is what gets photographers out at all hours and all kinds of weather to show everyone the wonders of nature.

James Davis via email

WE ARE ALL CONSERVATION

I love how your magazine introduces us to people who truly live the conservation lifestyle in *We Are Conservation*. God bless them! I live in a suburban area, but it's amazing how I can do small things that help Missouri retain its native fauna/flora species.

Kathleen Albin via email

BEAVER PROBLEM

I would like to give a big thank you to conservation staff, Todd Meese and Joe DeBold, for taking care of a problem I had with beaver in my lake. They were top notch and helped me out so much. I have learned a lot about beavers and how destructive they can be from Todd and Joe since this issue started. I greatly appreciate their assistance and the time they took working with me.

Bob Austin Lincoln



Wolf spider

SPIDER FAN

I was saddened by the negative comments about the October 2019 issue cover. For me, the cover was fascinating, and my young children and I purposefully went out to find wolf spiders that week, enjoying the newfound knowledge we had read in your magazine [*Little Wolves of Missouri*, Page 11]. I smile when a big wolf spider crawls across the path on my homestead. I know they are helping keep down the population of critters that would otherwise try to decimate my garden. And frankly, they are beautiful.

Wren Everett via email

CAREER GOALS

I have been reading the *Missouri Conservationist* for over 50 years. It was partially responsible for my choice of professions.

My father ran a small newspaper, *Richland Mirror*, and received a copy of the *Conservationist*. He brought it home to me each month. I read and enjoyed it tremendously, and it caused me to get interested in wildlife conservation. I received three degrees in biology at the University of Missouri, taught biology at two universities, and joined the U.S. Fish and Wildlife Service, where I managed research centers for the Interior Department and the wildlife research work of several universities.

Now I am retired, and I still read the *Conservationist* and enjoy it the same as always! Congrats on such a high-quality publication.

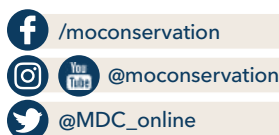
Dr. W. Reid Goforth via email

THANKS FOR THE INFO

I can't begin to tell you how much I appreciate your magazine, especially the format. It has been very informative for me.

Bosco Westrich via email

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email Readerphoto@mdc.mo.gov,
or include the hashtag #mdcdiscovernature
on your Instagram photos.



1

1 | Ozark witch-hazel by **Kathy Duncan**, via Flickr

2 | Ice fishing at Busch CA by **sunshine.girl90**, via Instagram

3 | Champion bur oak tree by **Harold Ostergaard**, via email



2



3

MISSOURI CONSERVATION COMMISSIONERS



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Up Front

with Sara Parker Pauley

✖ It's typically at year's end that I find myself taking stock, as the saying goes. This time, it began at Thanksgiving, my favorite holiday because extended family gathers from miles and states away. We laugh, eat too much, retell family stories, and celebrate family with all its imperfections. This particular one was bittersweet because just a few months prior, we lost my cousin, Paul, whose humor I adored and courage I admired. After decades of fighting COPD, he'd lost the battle, but had left a legacy worthy of a well-lived life — his beautiful wife and three daughters and their families. One daughter brought a framed picture of her father's favorite sayings. The print read: Follow Your Dreams; Keep Asking Big Questions; Make Every Day Count; and Always Make Good Choices.

His maxims made me reflect on this past year at the department and how we had been asking and answering big questions about the future of conservation in Missouri, including whether our organization was as prepared as it could be to accomplish its mission. To ensure we were making every day and dollar count, we reassessed priorities and realigned the organization to better deliver on those priorities. This rigorous self-review and subsequent readjustments have not been easy. Change never is. There is still much work ahead this coming year to fully implement our new roadmap, but we've taken stock, made tough decisions, and we're ready to hit the ground running in 2020.

Sara Parker Pauley

SARA PARKER PAULEY, DIRECTOR
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Printed with soy ink



mdc.mo.gov 3

Nature LAB

by Bonnie Chasteen

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

QUAIL MANAGEMENT

Winter Survival Study

✳ What kind of management and resulting cover help bobwhite quail evade hungry predators and survive winter's bitter weather?

Research partners, including University of Missouri graduate research assistant Alisha Mosloff, University of Missouri Assistant Professor Mitch Weegman, MDC Resource Scientist Tom Thompson, and U. S. Forest Service Research Wildlife Biologist Frank Thompson, are working to answer this and other questions about quail survival throughout the year.

Thompson said that looking at only one specific period has limited research in the past. "Getting that full life-cycle picture of how quail populations are doing throughout the whole year will really help," he said.

Mosloff and partners focused their winter study on intensive versus extensive landscapes in south-west Missouri. "Intensive is more the traditional type of management," Mosloff said. "For example, working on smaller blocks of less than 40 acres interspersed with small food plots, grass strips, and cover habitat."



Early results show that winter survival is higher where quail have native grass cover with woody shrubs nearby.

Effort yields insights into habitat use as part of a larger life-cycle study

Extensive describes large tracts of native grasslands and prairies interspersed with shrubs and managed with periodic grazing and fire.

"We're looking to contrast these two management practices to see which might lead to higher survival during the winter," Mosloff said.

She and the research crew collared and radio-tracked quail on the same five sites, three extensive and two intensive, in 2017 and 2018. The crew also collected data on the kinds and amounts of vegetation on each of the study sites in 2018.

In addition to comparing the effects of traditional versus prairie-management practices on quail winter survival, the partners can also compare winter versus summer survival. "These two studies have been conducted in tandem," Weegman said.

"We're finally getting into what quail need throughout the full year," Mosloff added.

Quail Winter Survival at a Glance



Methods

Researchers captured adult and hatch-year quail using funnel traps during October 2017 and 2018 on three traditionally managed conservation areas and two prairie-dominated conservation areas

- 2017: Caught 136, Radio-tagged 101
- 2018: Caught 158, Radio-tagged 119
- Tracked tagged birds three times per week, Nov. 1-Jan. 31
- Collected vegetative data in 2018

Dade County



Preliminary Results

Adults have **higher survival (82%)** than hatch-year birds (67%)

Survival is higher on landscapes that have **heavy woody components**

Native grass improves survival if there is enough shrubby cover

Prescribed burning **within the last 2 years** decreases survival

Research Partners

Missouri Department of Conservation, University of Missouri College of Agriculture, Food & Natural Resources, U.S. Forest Service

In Brief

News and updates from MDC



APPLY FOR SPRING MANAGED TURKEY HUNTS

ONLINE APPLICATIONS
BEGIN FEB. 1

➔ Missouri youth, archery, and firearms turkey hunters can apply online for 2020 spring turkey managed hunts starting Feb. 1 at mdc.mo.gov/springturkeyhunts. Managed hunt details and application procedures are outlined on the webpage. Drawing results will be posted starting March 15.

Spring turkey hunting youth weekend is April 4 and 5 with the regular spring season running April 20 through May 10.

Detailed information on spring turkey hunting will be available in the 2020 *Spring Turkey Hunting Regulations and Information* booklet, available where permits are sold beginning in February. To learn more about turkey hunting in Missouri, visit short.mdc.mo.gov/Z3h.

Buy Missouri hunting permits from numerous vendors around the state, online at mdc.mo.gov/buypermits, or through the MDC free mobile app — MO Hunting — available for download through Google Play for Android devices or the App Store for Apple devices.



GIVE A HOLIDAY GIFT BACK TO NATURE

MDC's Forestry Division reminds you not to throw that cut Christmas tree into the trash after the holidays. Recycle it! Many communities have a Christmas tree-recycling program. If not, there are several creative ways to make use of your tree in nature.

Place the tree in the backyard to offer cover for wildlife, or under bird feeders to provide roosting locations in the branches. Add some post-holiday treats as ornaments by coating pinecones with peanut butter and adding bird seed.

Have your tree shredded or chipped for mulch, or place cut branches over dormant plants to provide a bit of insulation during the winter and to add organic matter as the needles fall.

You can also sink the tree in a pond to enhance fish habitat. Trees give fish a place to rest, nest, and escape predators. Multiple trees make the best cover so work with friends, family, and neighbors to combine efforts. Anchor the trees with concrete blocks and sink them at a depth of about 8 feet with the trees placed in a row.

If you used a balled live evergreen and your ground is still soft enough to dig, add it to your home landscape for years of enjoyment and wildlife cover.

Ask MDC

Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov
or call 573-522-4115, ext. 3848.

Q: I noticed a blue jay fill his mouth with sunflower seeds without shelling them. Does he eat the shells? Or does he crack them somewhere else?

➔ The blue jay may eat an entire sunflower seed every now and then, but it's more likely it was storing the food in a cache for later. Each individual adult eats or caches several thousand acorns, hickory nuts, or other hard mast every autumn. This species is also capable of holding seeds in their "crop," an expandable pouch in their esophagus used to transport and store excess food prior to digestion.

Blue jays also hold seeds between their toes and hammer on them with their beaks to extract the nut meats. Typically, perching birds — like the jay — can't break down seed hulls as effectively as birds with more muscular gizzards, such as turkeys, grouse, and quail.



Blue jay



Skipjack herring

Q: I've heard skipjack herring make good catfish bait. Can you tell me more about this fish?

➔ Named because they tend to "skip" or leap out of the water in pursuit of minnows, skipjack herring (*Alosa chrysochloris*) are highly migratory and travel in large schools.

A native fish, they occur in our state's largest rivers, including the Missouri, Osage, Meramec, and Mississippi rivers. They are most common in the Bootheel, downstream from the mouth of the Ohio River.

Scientists do not know exactly when and where this species spawns, but they believe it begins in early May and ends soon after July 1. A good place to look for them is in the swift currents below Bagnell Dam, where their spawning run is interrupted. They are not readily caught by anglers, which makes them a new challenge for experienced anglers.

Skipjacks are bony and lacking in flavor, which is why they are seldom used as food. The fish's oily flesh is thought to attract catfish and can be used — either alive or as cut bait — on juglines and trotlines.



Eastern red bat

Q: I recently noticed an eastern red bat flying in January. Is this normal?

➔ Yes. On sunny winter days when temperatures rise above 50 degrees, it's not unusual to see eastern red bats (*Lasiurus borealis*) awake and feeding on whatever flying insects are available.

Many eastern red bats migrate southward, beginning in September and continuing until November. Although most of the migration occurs at night, sometimes small numbers may travel together in the daytime. Little is known of

their migration pattern. Some bats migrate to Missouri from northern states; others are Missouri bats overwintering in place. They tend to spend the winter in sheltered spots like clusters of dead leaves, tree cavities, or under bark.

Since this species is adapted to survive drastic temperature fluctuations, very few use caves. A few eastern red bats might swarm at the mouths of certain caves in autumn and mingle with other bat species, but they generally do not hibernate in them.



Parker Rice

BUCHANAN COUNTY
CONSERVATION AGENT

offers this month's

AGENT ADVICE

At the beginning of the new year, people often take stock of everything from their health to their finances. Why not add your land to that list? January is the time to contact your local private land conservationist and wildlife or fisheries biologist to start planning for your land for the year ahead. Whether you want to grow your quail population, create a pollinator plot, build a pond, or attract more deer, these folks will come out for free and offer their expertise. Some projects you can do immediately, like building brush piles for small game. Other projects, like ordering saplings and natives for long-term growth, may take more time. Contact your local conservation agent (short.mdc.mo.gov/ZoF), and he or she will direct you to the right resource.

What IS it?

Can you guess this month's natural wonder?

The answer is on
Page 9.



WE ARE CONSERVATION

Spotlight on
people and partners
by Madi Nolte

Omar Jawdat

➔ Jawdat, an Iraqi immigrant and neurology professor at the University of Kansas, first showed interest in waterfowl hunting at a public duck-calling program at Anita B. Gorman Conservation Discovery Center. It was there he met former MDC Education Specialist James Worley, who became a mentor for this adult-onset waterfowl hunter. In the past two seasons, Jawdat has hunted almost every weekend and has even begun teaching others.

Under his wing

"I have kind of taken Jawdat under my wing and even invited him out to hunt with me," Worley said. "And now, he is definitely a waterfowl hunter. He's hooked."

In his own words

"If someone has an interest, there is always a way," Jawdat said. "Hopefully there will always be programs like these so people can get the right education and become conservation aware, and hopefully pass that on to their friends and family."

James
Worley (left)
mentors
Omar Jawdat
on his first
duck hunt.





WINTER TROUT HARVEST BEGINS FEB. 1

Fisheries staff have stocked more than 70,000 rainbow trout in urban-area lakes around the state for winter trout fishing. Many of these areas allow anglers to harvest trout as soon as they are stocked, while other areas are catch-and-release until Feb. 1. Find locations near you at short.mdc.mo.gov/Zpm.

Beginning Feb. 1, all urban-area lakes allow the harvest of trout. The daily limit is four trout with no length restrictions. All Missouri residents older than age 15 and younger than age 65 must have a fishing permit. All nonresidents over age 15 must have a fishing permit. To keep trout, all anglers regardless of age must have a Missouri trout permit.

Learn more about trout fishing at short.mdc.mo.gov/Zps.



MDC REDISCOVERS PALLID SHINER

Retired MDC Fisheries Biologist Bob Hrabik recently rediscovered a "lost" species of fish while leading a class of university students on a fish-sampling field trip at Cane Creek Ditch in southeast Missouri. Last September, Hrabik and the class found several specimens of the long-elusive small minnow called the pallid shiner (*Hybopsis amnis*).

Pallid shiners were last seen in the state in 1956. The species was once widespread throughout the eastern half of Missouri. Over time, it became increasingly uncommon and then vanished, causes unknown.

WHAT IS IT? SNOW FLEAS

Snow fleas (*Hypogastrura nivicola*), also known as springtails, are tiny, oval creatures that lack wings. They have a forked tail-like structure that enables them to spring, or jump. Snow fleas swarm in foot tracks and other indentations in the snow, making the snow appear almost black. Their bodies act like an antifreeze, allowing them to remain active in the freezing temperatures. Their numbers are small and their distribution limited, making them vulnerable to extirpation from the state.





Annual Review

SERVING NATURE AND YOU:
FISCAL YEAR 2019

July 1, 2018–June 30, 2019



Pipevine swallowtail
butterflies feed along
a sandbar on the
Eleven Point River.

PHOTOGRAPH BY
NOPPADOL PAOTHONG



On one of our first dates, my husband, Scott, a professional tournament angler, and I found ourselves at our favorite sporting goods store. Spring turkey season was days away, so I thought I would test out some of the latest turkey calls on display. Scott asked innocently, “Don’t you already own a whole box full of turkey calls?” “Yes,” I answered, casting him my why-are-you-even-asking look. “So why do you need another?” he chimed in next. Now, this question hit me hard. I was truly irritated. I responded, “Do you think I would ever ask you if you need another lure?” A sheepish look came over his face and he responded, “I won’t ask you that question again.” True to his word, he hasn’t.

Clearly, I’m not alone in my quest to freshen up the tools in my outdoors arsenal. In 2016 alone, more than 53 million participants spent more than \$93 billion in outdoor-related retail sales, according to a report by Southwick Associates.

I so appreciate the words of Rob Dixon, director of Missouri’s Department of Economic Development and an avid outdoorsman, on this opening page, especially highlighting the importance of Missouri’s outdoors to our state’s economy. These next few pages of our annual review are also packed full of incredible partnerships and our collaborative efforts to take care of nature, connect people with nature, and maintain public trust. We know that when nature thrives, people also thrive and so does our economy.

Thank you for all you do for conservation and continuing to be a valuable part of our success! We couldn’t do it without you.

SARA PARKER PAULEY, DIRECTOR

THIS TIME OF YEAR IS TOUGH.

It’s an eternity until next deer season, and the crappie are a long way from spawning. As I look at the brown trees and dream about spring, I’m thinking green — and I don’t just mean the leaves. I’m talking about the economic impact of Missouri’s conservation efforts and the outdoors industry. It’s big business.

A lot of people naturally think about outfitters, bait shops, or taxidermists, but there is more to it. Missouri is home to hundreds of businesses that focus on the outdoors industry. They include advanced manufacturers, distribution centers, information technology, tourism attractions, retailers, and many others — large and small. All told, there are more than 111,000 jobs that are supported by more than \$15 billion in economic activity from the outdoor industry in our state.

Just as important, Missouri’s many natural blessings help our economy in other ways. A talented and skilled workforce is the most important factor that influences where a business will locate and grow, and in today’s economy, people can find a job anywhere. We need the best and brightest to come and stay here.

Our pristine lakes and streams, the majestic Ozarks, and our rich farmland — not to mention their diverse flora and fauna — all provide Missourians with endless opportunities to enjoy the outdoors. People want to live and work in a great place, and Missouri is a great place thanks to our conservation efforts.

At the Department of Economic Development, we partner with our colleagues at the Department of Conservation, and we’re proud of the work that they do. Thank you for your support of conservation and the outdoors industry. It’s good business for Missouri!



ROB DIXON,
DIRECTOR OF
MISSOURI
ECONOMIC
DEVELOPMENT

Operating Budget

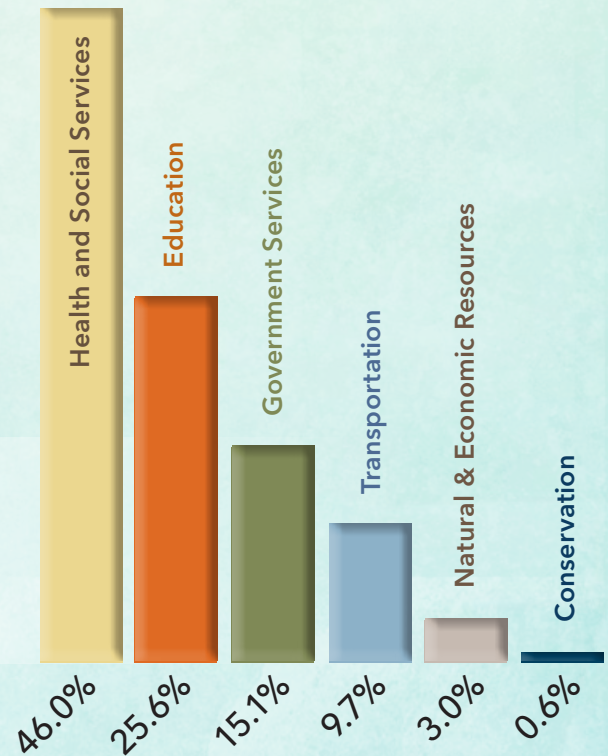
Total Missouri Operating Budget for Fiscal Year 2019

\$29,757,795,223



Missouri State Operating Budget

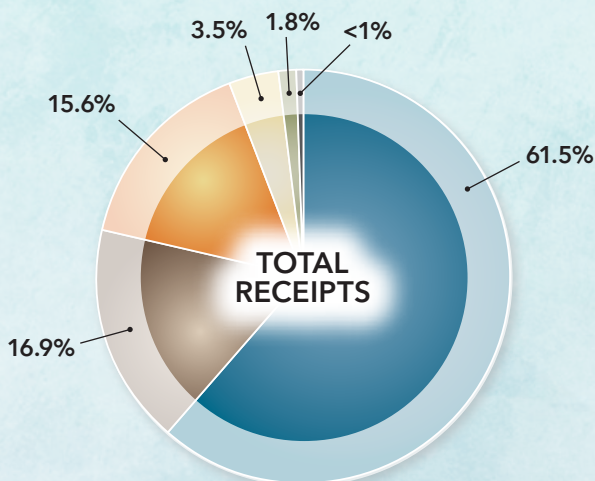
MDC represents **less than 1 percent** of the total state budget and **receives no** state general revenue.



MDC Receipts

MDC gets the majority of its funding through the **conservation sales tax**. For every \$8 spent on taxable items, one penny goes to conservation.

Conservation Sales Tax	\$120,934,964
Permit Sales	\$33,164,386
Federal Reimbursements	\$30,673,522
Sales and Rentals	\$6,882,332
Other Sources	\$3,455,309
Interest	\$1,602,557



MDC Disbursements

Funds are distributed throughout the divisions to accomplish the **top conservation priorities** across the state for MDC.

Wildlife	\$24,212,581
Capital Improvements	\$21,453,722
Forestry	\$20,143,523
Protection	\$18,746,097
Outreach and Education	\$17,111,951
Fisheries	\$14,974,144
Information Technology	\$14,804,233
Design and Development	\$13,907,699
Resource Science	\$13,821,680
Administrative Services	\$12,467,318
Private Land Services	\$10,643,128
Administration	\$3,620,636
Human Resources	\$2,630,281
Regional Public Contact Offices	\$2,408,671
County Assistance Payments	\$1,131,741

NOTE: Disbursements include all operating, other agency, and capital improvements from the Conservation Commission Fund. Other agency disbursements are appropriated outside the Department of Conservation operating budget. Fuel, benefits, and other disbursements were allocated to the appropriate divisions.

MDC Takes Care of Nature

We protect and manage Missouri's fish, forests, and wildlife, so you can enjoy healthy and sustainable resources now and in the future.

COMPREHENSIVE CONSERVATION STRATEGY

MDC continues to develop and implement Missouri's Comprehensive Conservation Strategy to identify and prioritize the investment of limited resources. A powerful tool to come from this strategy is the identification of landscape-based conservation priorities, also known as conservation opportunity areas (COAs). The department has prioritized nine COAs to receive increased focus, including partner and private landowner engagement and greater resource investment. Each of the nine priority geographies has a team to build and implement initiatives.

DAVID STONNER

Brickyard Hills Natural Area



INVASIVE SPECIES

Invasive species — nonnative plants, trees, and animals introduced for a specific purpose — often harm recreation, wildlife, and agriculture. When invasive plants and trees are left to thrive, they choke out natives, which can destroy valuable habitat and are hard on wildlife populations. Invasive animal species, from zebra mussels to feral hogs, also extensively damage habitat, threatening native species and ecosystems.

MDC is actively engaged in and serving leadership roles within key invasive species groups, including the Scenic Rivers Invasive Species Partnership, Missouri Invasive Plant Task Force, Missouri Invasive Forest Pest Council, and Missouri Feral Hog Elimination Partnership.

Working with the Missouri Prairie Foundation and the Missouri Department of Transportation, MDC is spraying roadside invasive plants in priority conservation landscapes in southeast Missouri. In addition, we've enhanced and refocused outreach efforts so Missouri's citizens can join in the fight against invasive species.



FERAL HOGS

MDC is a member of the Missouri Feral Hog Elimination Partnership, which is a group of agencies and organizations dedicated to the elimination of feral hogs from the state. In FY18, the partnership implemented a statewide strategic plan, which is already showing positive results. In Elimination Area 1, partner staff worked tirelessly to remove the feral hogs that were present on public recreation areas and private lands. With no public lands open to feral hog hunting in Area 1, staff removed 459 and 502 hogs in 2017 and 2018 respectively. Currently, in this same area, we have less than 10 known feral hogs and staff continue to work toward complete elimination. Once all known feral hogs are eliminated from the area, staff will monitor the area to ensure no hogs were missed and no hogs are illegally released.

MDC and its partners continue to focus efforts on trapping entire sounders, or groups of hogs, at one time. Hunting has hindered efforts to eliminate feral hogs in Missouri and other states, so MDC and some of its partners previously banned hunting of feral hogs on lands under their ownership or management. The U.S. Forest Service is evaluating public comments on a proposed feral hog hunting ban in Mark Twain National Forest. The partnership remains focused on informing the public to "Report, Trap, and Eliminate" feral hogs, eliminating hogs from public lands, and assisting landowners in removing feral hogs from private property. The partnership has assisted hundreds of landowners in eliminating feral hogs from their land, but it will take support and cooperation from all Missouri landowners to eliminate feral hogs from the state.

ELK AND BLACK BEAR

Elk and black bear once roamed Missouri, but unregulated hunting and land changes due to settlement and timber harvest eliminated the state's wild elk population in the 1800s and drove bears to near extinction by the 1950s. Through reintroduction and migration, both of these species have returned to the state and are thriving.

In the early 1960s, Arkansas conducted a black bear reintroduction program in the Ozark and Ouachita mountains. In addition, genetic work indicates that Missouri maintained a small remnant bear population in the most remote parts of the Ozarks. Following the reintroductions in Arkansas, sightings of black bears began to rise in Missouri, with some bears undoubtedly coming into the state from Arkansas. Bear sightings continue to increase as the population grows and expands in range, and with that, nuisance complaints are also on the rise. In 2012, it was estimated that there were just under 300 bears in the state. For the past five years, MDC has been studying bears to determine how quickly the population is growing. Based on this research, the department estimates there are between 540 and 840 bears in the state. The 2008 Black Bear Management Plan established a benchmark of 500 bears before considering a limited hunting season. Given the population estimate has exceeded this benchmark, MDC is beginning discussions of a hunting season.

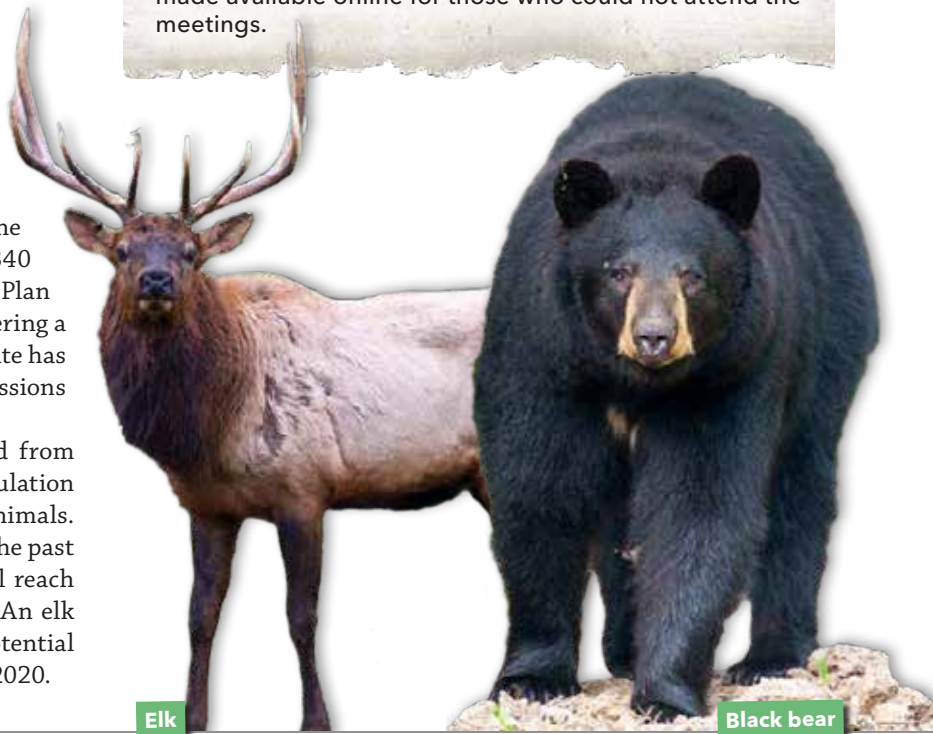
MDC released 108 elk over a three-year period from 2011–2013. From those initial releases, the elk population in Missouri has steadily grown to an estimated 175 animals. If reproduction continues at the rate observed over the past few years, it is anticipated that the population will reach a level that will support a limited hunting season. An elk hunting season structure has been developed with potential for an inaugural modern-day elk hunt in the fall of 2020.

Elk Open House

During the first week of December 2018, three open houses were conducted to gather public input regarding elk regulations under consideration. Open houses were held in Van Buren, Ellington, and Eminence. These were the same communities where the first open houses were held in 2008 before the elk were reintroduced. The public was asked to provide input on the following:

- Elk management plan
- Landowner opportunities
- Hunting methods and season dates
- Permit allocation

Online comments were collected from Dec. 1–31, and an informational video, as well as digital copies of the same print material available at the open houses, were made available online for those who could not attend the meetings.



Elk

Black bear

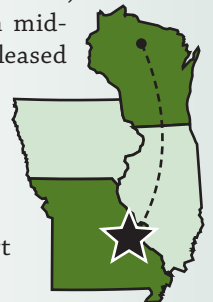


Ruffed grouse

RUFFED GROUSE RESTORATION

The ruffed grouse is native to Missouri, but the bird's numbers have declined sharply over the past several decades due to habitat loss. To reestablish a population in Missouri, MDC and the Wisconsin Department of Natural Resources are partnering in a project that involves trapping 300 grouse in northern Wisconsin and relocating them to the River Hills Region of east-central Missouri over a three-year period (2018–2020).

Grouse trapping began in August 2018 and lasted through mid-September. Grouse were transported daily from Wisconsin and released in Missouri within a day of being captured to minimize the birds' stress. One hundred grouse were transported from Wisconsin to Missouri last year and released at three sites on Little Lost Creek Conservation Area in Warren County where extensive habitat management has been conducted. Quail and Upland Wildlife Federation contributed significant time and effort to this restoration project.





CRAPPIE OPEN HOUSE

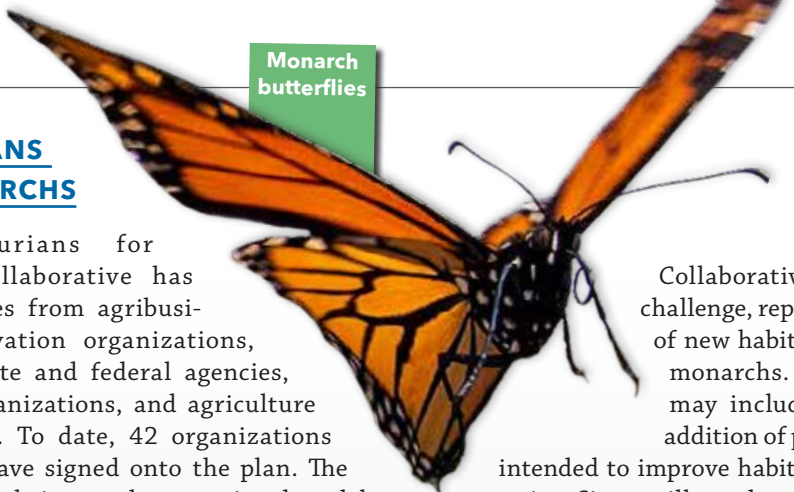
Over the past five years, anglers have voiced concerns about the quality of crappie fishing at Lake Wappapello and Smithville Lake. In August and September 2018, three open houses were held to gather public input regarding possible regulation changes on both lakes. There was also a “virtual” open house opportunity for people who could not attend a meeting to learn about the issues and provide comments. The public shared concerns about catching a much higher proportion of sublegal fish than legal fish. An in-depth look at the crappie population and its response to the past regulations has been ongoing. The analysis of the data revealed the regulations were not producing the desired results. The anglers who provided comments were very supportive of the proposed regulation changes, which went into effect March 1, 2019.

Crappie Regulation Changes

New crappie regulations at Smithville and Wappapello lakes allow anglers to keep more fish, but also boost the average size of black crappie to more desirable lengths.

White crappie tend to grow larger than black crappie, and most black crappie never reach 9 inches and are not harvested by anglers.

The new regulation allows anglers to keep a daily limit of 30 crappie, but no more than 15 of those can be greater than 9 inches long. This change allows anglers to utilize an overpopulation of stunted black crappie, while protecting against overharvest of the larger white crappie.



MISSOURIANS FOR MONARCHS

The Missourians for Monarchs collaborative has representatives from agribusiness, conservation organizations, academia, state and federal agencies, volunteer organizations, and agriculture organizations. To date, 42 organizations in Missouri have signed onto the plan. The collaborative is being used as a national model for other states because of the diversity and progress that has been made toward monarch and pollinator conservation in Missouri.

Missourians for Monarchs' objective is to create, conserve, and manage 385,000 acres (19,000 acres per year) of additional habitat with 200 milkweed stems per acre by 2038.

Collaborative partners have responded to the challenge, reporting nearly 305,000 acres statewide of new habitat or land newly managed to benefit monarchs. Newly managed land for monarchs may include changes in mowing timing, the addition of prescribed burning, or other practices intended to improve habitat for monarch butterflies and other species. Since milkweed populations in new plantings or newly managed areas won't develop for another few years, more research and monitoring of milkweed densities will be needed to determine progress, but it is estimated that as many as 61 million stems may already be in progress statewide. Continued management, such as prescribed burning and invasive species control, must take place on a regular basis to maintain and encourage necessary expansion of the milkweed populations on reported acres. Monitoring is one challenge the collaboration plans to spend time tackling. The deadline for the U.S. Fish and Wildlife Service to determine the monarch's listing designation has been pushed back to December 2020.



BERRY CASE

MDC conservation agents concluded one of the largest poaching investigations in Missouri history, resulting in state, federal, and international convictions, fines, and jail time for members of a poaching ring responsible for the illegal taking of hundreds of deer in Missouri, other states, and Canada.

After an 8½-month investigation, agents served arrest warrants on David Berry Jr. and David Berry Sr., Springfield, and Kyle Berry, Everton. Others received summonses to appear in court on charges stemming from this investigation. Charges were filed in Lawrence, Linn, Shannon, Dade, Greene, Putnam, Harrison, DeKalb, Barton, Vernon, and Benton counties. Most violations were related to the illegal taking of deer, many of which were trophy-class animals. In many instances, only the heads and antlers were removed. More than 300 charges were filed on this group in state, federal, and international jurisdictions. To date, this group of poachers has paid \$51,000 in fines and court costs and collectively served over 300 days in jail.

David Berry Sr. and David Berry Jr. had hunting, fishing, and trapping privileges revoked for life by the Missouri Conservation Commission. Other family members had hunting and fishing privileges revoked for up to 18 years, while another suspect, who assisted in the taking of wildlife illegally, had his hunting privileges revoked for five years.

David Berry Jr. served seven months of a one-year jail sentence in Lawrence County after pleading guilty to taking wildlife illegally. Additionally, the judge in the case ordered him to watch the Walt Disney classic *Bambi* once a month for the duration of his incarceration.

“It is unknown how many deer the main group of suspects has taken illegally over the past several years,” Lawrence County Conservation Agent Andy Barnes said. “It would be safe to say several hundred.”

David Berry Jr. was also sentenced to an additional 120-day sentence in Barton County for a felony firearms probation violation.

The investigation was aided by information obtained from Operation Game Thief (OGT), a hotline sponsored by MDC and the Conservation Federation of Missouri.



Anyone with information concerning poaching can call the OGT hotline at

1-800-392-1111

The hotline is managed 24 hours a day and callers may remain anonymous. Rewards are available.



Missouri's state goal of 77 million additional milkweed stems is

16 years

ahead of schedule.



Butterfly milkweed

CHRONIC WASTING DISEASE

Chronic wasting disease (CWD) is a deadly disease in white-tailed deer and other members of the deer family, called cervids. CWD kills all deer and other cervids it infects. MDC is working with conservation partners to monitor CWD where it is found, detecting the disease early in new locations, and working with hunters, taxidermists, meat processors, landowners, and others to slow or limit the further spread of the disease in Missouri.

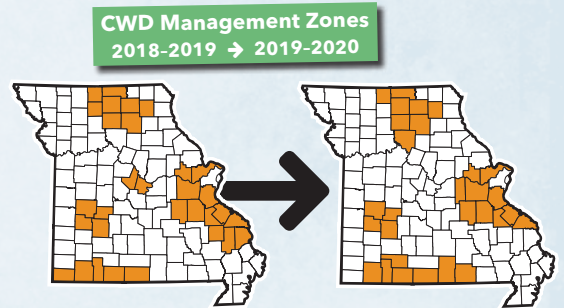
During the 2018-2019 CWD surveillance season, over 32,000 free-ranging deer were sampled for CWD in Missouri. The disease was detected in 41 deer.

Since 2012, CWD has been detected in 116 deer in 16 counties in Missouri. While the introduction of CWD into new areas of Missouri is concerning, the number of CWD-positive deer in these areas remains low, and CWD remains relatively rare in the state.

Changes for FY20

CWD-related regulations and management actions aim to keep the number of infected deer low over time and limit the potential effects of the disease into the future. Beginning in July 2019, the number of counties included in the CWD Management Zone was decreased to exclude counties greater than 10 miles from CWD detections. The change was made after analysis of four years of data from a deer study conducted by the University of Missouri and MDC determined that over 90 percent of deer in Missouri travel less than 10 miles. Based on this new information, MDC reevaluated the risk of CWD transmission caused by dispersing deer and refined the size of the CWD Management Zone to reach a balance between disease management goals and the impact of regulations on hunters and landowners. Additionally, Cole, Moniteau, and surrounding counties were removed from the CWD Management Zone because no additional cases of CWD have been found in central Missouri since a single detection in Cole County in 2015.

For more CWD info, visit mdc.mo.gov/cwd



White-tailed deer

MDC Connects People With Nature

We provide places for you to enjoy nature and opportunities
for you to learn about and discover nature.



Northern bobwhite

PRIVATE LAND PARTNERSHIPS

MDC has a long history of partnering with others to put private land biologists and foresters on the ground to provide technical assistance to landowners. With over 90 percent of Missouri managed by private landowners and most hunters using private land, it is an important focus for MDC and several of our partners. The department partners with organizations such as Quail Forever, Ducks Unlimited, the National Wild Turkey Federation, and the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) to provide 15 additional private land biologists. In 2018, these partnerships resulted in additional cooperators completing 14,000 acres of conservation practices with cost-share assistance. The department also has agreements with agriculture organizations such as MFA, the Missouri Soybean Merchandising Council, and the Missouri Corn Merchandising Council for additional partnership positions. These positions help promote pollinator and quail habitat, soil health, and water quality to the members of these organizations.



COMMUNITY CONSERVATION

MDC is working in Missouri's communities through cooperative positions with partners such as the City of Columbia, Green City Coalition in St. Louis, and Deep Roots in Kansas City. These positions help the department engage those communities to promote the use of native plants, green space, and sustainable development. By working together, MDC and its partners can do more than they ever could by themselves. These important partnerships help expand the footprint of conservation in Missouri communities and on private land.



St. Louis: Green City Coalition

Green City Coalition is a partnership with MDC, the City of St. Louis, the Metropolitan St. Louis Sewer District, and the St. Louis Development Corporation. Working collaboratively with a growing network of member organizations and residents, partners are converting concentrations of vacant land to new community green spaces. Over 200 vacant publicly owned parcels totaling 23 acres have been reimagined by Wells Goodfellow and Walnut Park East neighborhood residents and students through participatory mapping, design workshops, and a host of other community events. FY19 activities focused on moving from the planning to implementation phase, including demolition of vacant structures and preparation and planting of 80 vacant lots totaling 9 acres.

Missouri Botanical Garden/Shaw Nature Reserve: Restoration Outreach Coordinator

A new partnership with a long-term partner included supporting the restoration outreach coordinator position with the Missouri Botanical Garden. This position, located in St. Louis, provides for outreach, education, public awareness, and coordination for the control of invasive species. The coordinator plans, organizes, and leads year-round invasive removal events and restoration activities in priority communities as well as providing education.

City of Columbia: Community Conservation Planner

To help service the needs of central Missouri residents, MDC entered into a cooperative agreement with the City of Columbia for a community conservation planner. The position has helped Columbia take dramatic steps forward in encouraging the use of native plants.

In FY19, the Columbia City Council passed a landscape management ordinance, and the city developed an integrated vegetation management plan to guide the Public Works Department.

The city, in partnership with MDC, the 13th Judicial Court, and the U.S. Fish and Wildlife Service, also developed a conservation biology program that focuses on monarch butterfly habitat restoration and education for at-risk youth who have been convicted of nonviolent crimes and owe restitution.

Deep Roots (Kansas City Native Plant Initiative)

The diverse partnerships and disciplines participating in the Kansas City Native Plant Initiative (KCNPI) include a network of more than 60 private, public, and nonprofit organizations from the Kansas City area. KCNPI participants have a shared vision — a future of beautiful, native landscapes connecting heartland communities where nature and people thrive together. KCNPI has recently decided to rebrand itself as Deep Roots to better reflect the native plants that it passionately promotes.

Deep Roots is partnering with the Anita B. Gorman Discovery Center in Kansas City and has adopted one of the planting beds at the Discovery Center to demonstrate how native plants can be used to enhance landscaping.

To engage residents around the Discovery Center, Deep Roots assisted with a series of workshops, including an Introduction to Native Plants, Native Plant Raingardens, and Design and Management of Native Landscapes. Over 200 people attended the first event, which may be the largest number of participants at a Discovery Center event.



Gray-headed and purple coneflowers



CONSERVATION PLANNING TOOLS MANUAL FOR COMMUNITY PLANNERS

MDC took a proactive, innovative, and creative approach to developing a conservation planning tools manual designed to assist city, county, and regional planners.

Covering everything from planning to design and development codes and standards to property rights and model ordinances, the manual is a comprehensive overview of planning tools needed to transform any jurisdiction into a conservation community.

The overall objective is to change the paradigm of thinking that cities are incompatible with nature, to a realization that there are stewardship practices suitable for every land use.

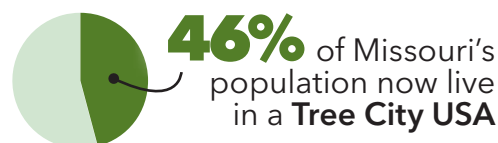
CENTER FOR NEIGHBORHOODS

Four workshops have been planned and two conducted by the University of Missouri-Kansas City's Center for Neighborhoods program. The curriculum for the workshops was created specifically for neighborhood leaders. The first two listed below have been conducted with the final two scheduled for FY20.

- **Introduction to Neighborhood Conservation:** How and why conservation practices can help improve the quality of life in a neighborhood and introduction to local environmental nonprofits and their programs.
- **Native Plants for Novices and Trees Are Terrific:** An introduction to native plants and how they can be used to beautify a neighborhood with reduced inputs and increased habitat, the benefits of trees, how to manage and maintain them, right tree right place, and information on related grants and programs.
- **Stormwater Management:** Why it is important to manage stormwater, how to manage it with green infrastructure, maintenance issues, and information on related grants and programs.
- **Vacant Lot Issues/Conservation Easements:** Proven ways to repurpose vacant lots, how conservation easements work and how they can be used to manage vacant lots, and information on related grants and programs.

TREE CITY USA

MDC certified 107 Tree City USA communities in Missouri, an increase from 104 last year. Cities of all sizes participate in the program, from Kansas City, with a population of 441,545, all the way down to Glen Echo Park at 160 residents.



NATURE SCHOOL

MDC and Columbia Public Schools (CPS) have entered into a partnership to design, develop, construct, and operate a new nature school in Columbia. The nature school would be dedicated to place-based learning, both through indoor classrooms and outdoor scientific-learning opportunities, to encourage students to discover, interact, and explore Missouri's natural communities and resources. The nature school will be built and operated on several hundred acres of property in the Columbia area, adjacent to Three Creeks Conservation Area, and will include a variety of native habitats on the property. The nature school model will bring 5th grade students and other educational programming from Columbia and other Boone County school districts to the school for up to 10 days to allow students to become fully immersed in nature and place-based learning. While an initial concept has been agreed to for the nature school, CPS and MDC have significant work to do on this project moving forward to see it to completion. We are excited by each new step that brings us closer to making this innovative nature school a reality for students in Missouri.

TRIM GRANTS

In FY19, MDC funded 35 Tree Resource Improvement and Maintenance (TRIM) grants for a total of \$340,000 dollars. This funding helps communities with a variety of urban forestry projects, such as master plans, tree inventory, education, hazard tree removals, pruning, and planting.



UNIVERSITY PARTNERSHIPS

MU South Farm

MDC is working closely with the University of Missouri's South Farm Extension and Research Center to investigate the habitat needs and food preferences of monarch butterflies and native bumble bees, which are essential to many agricultural crops across the nation. This research will help promote the integration of agriculture and natural resource conservation and the essential adoption of a sustainable land ethic. A portion of this partnership also focuses on citizen education and participation, including groups such as Master Naturalists and Master Gardeners as well as individual homeowners and city officials.



Bumblebee
on common
milkweed

Missouri State University Journagan Ranch

MDC has been working closely with Journagan Ranch, a working cattle ranch owned and operated by Missouri State University. The goal of the partnership is to learn and demonstrate the compatibility and integration of wildlife-friendly practices into a profitable cattle operation. The collaboration began with the development of a grassland management plan and has been expanded to address alternative livestock watering systems, livestock exclusion fencing, cross fencing to divide grazing paddocks, wildlife watering facilities, timber stand improvement, cedar removal, fire line construction, prescribed fire, landowner field days, water quality monitoring protocol, pollinator habitat, glade and woodland restoration, annual bobwhite quail covey counts, and the conversion of fescue to warm season grass.

University of Missouri Bradford Farm

Approximately 5,350 people visited Bradford Farm Research Center and were given the opportunity to learn about monarch butterflies, quail, and habitat management on a working Missouri farm. Nearly half of these visitors were K-12 students learning about monarch butterflies, their life cycle, the importance of milkweed to the caterpillars, and the benefits of having other native flowering plants as nectar sources. In addition, the habitat components for monarchs were relayed to other species like bobwhite quail. While Bradford remains a working farm, habitat management practices continue around the farm to demonstrate how wildlife and agriculture can coexist and remain profitable in accordance with a management plan. Managers conducted two prescribed burns totaling 37 acres and removed approximately 8 acres of cedar to improve the wildlife habitat on the farm.



Northern bobwhite

LANDOWNERS ASSISTANCE COST-SHARE PROGRAM

MDC allocated a record \$2.1 million in cost-share assistance to landowners to help them meet forest, fish, and wildlife objectives on their property. The department's cost-share pays for approximately 50–75 percent of the cost of installing practices such as timber stand improvement, natural community restoration, native grassland plantings, and pollinator habitat. In addition, over \$1 million in incentives were paid to landowners participating in

programs offered by other conservation partners to encourage higher quality plantings for wildlife, including bobwhite quail and pollinators.

MDC also helps the U.S. Department of Agriculture implement millions of dollars in practices for landowners through conservation programs funded through the federal farm bill.



CLOSE-TO-HOME FISHING OPPORTUNITIES

Community Assistance Program

MDC initiated the Community Assistance Program in 1980 to provide close-to-home fishing opportunities in communities throughout Missouri. Through this program and the closely related Corporate and Agency Partnership Program, MDC enters into agreements, typically for 25 years, with cities, counties, state and federal agencies, businesses, foundations, schools, and colleges to provide fisheries management at existing lakes and ponds and to cooperatively develop facilities for anglers and boaters at lake and stream areas.

MDC arranges for most of the funding (up to 75 percent reimbursement) through a new cash grant agreement using primarily Sport Fish Restoration funds for facilities development, where applicable.

MDC has cooperative agreements with 121 partners for the management of 176 public lakes (9,584 acres of water), 41 stream access areas, four lake access areas, and 10 aquatic resource education ponds.

Urban Winter Trout

MDC stocks more than 70,000 rainbow trout in 35 urban area lakes around the state for annual winter trout fishing, beginning in early November. Trout are typically found in the cold, spring-fed, streams of southern Missouri. Stocking selected lakes and ponds around the state during the winter months provides close-to-home trout fishing opportunities in parts of Missouri that normally don't have trout.

Rod and Reel Loaner Program

MDC provides free use of loaner fishing gear at 134 locations throughout Missouri for people who would like to try fishing. Locations include various public libraries, MDC offices, marinas, parks and recreation facilities, and state parks. Anglers can check out rod and reel sets and tackle boxes with some basic fishing essentials, such as hooks and sinkers.

Urban Fishing Program

MDC's Urban Fishing Program (UFP) celebrated its 50th anniversary in 2019.

The UFP was established in 1969 by the federal government to bring close-to-home fishing opportunities to people and infuse a positive influence into urban communities. The program launched in six cities, including St. Louis, with the cooperation of MDC and the St. Louis Parks and Recreation Department. MDC took over the UFP in 1972 and eventually expanded it into St. Louis County and Kansas City.

The program includes 17 lakes within St. Louis and St. Louis County, and 11 in the Kansas City area. It remains the oldest and one of the largest urban fishing programs in the nation.

Fishing Club Grant Program

MDC is offering grants to assist high school fishing clubs in providing quality fishing programs to their members.

Grants up to \$500 are available to clubs that participate in approved conservation activities, such as kids fishing clinics, fish habitat improvement projects, Stream Team cleanup, and special fishing events.

The money the clubs receive can be used to help with travel, equipment, and other needs, but cannot be used to pay wages for coaches or advisors.

MDC has received interest from 54 fishing clubs, with 17 signing grant agreements.





GRASSLAND CONSERVATION EFFORTS

Major droughts in 2012 and 2018 have made cattle producers increasingly interested in native grasses. Native grasses can withstand droughts, have been known to increase cattle weight gains and conception rates, and improve water quality, wildlife populations, and soil health. MDC is working with several partners to increase available assistance to cattle producers and others. The department has new agreements with Audubon, Quail Forever, University of Missouri Extension, MFA, and NRCS to provide added technical assistance to cattle producers. MDC has also leveraged funding for native grass planting with partners such as the Quail and Upland Wildlife Federation, Quail Forever, and the Department of Natural Resources' Soil and Water Conservation Program. Audubon's Conservation Ranching Program provides a market-based conservation approach, offering incentives for good grassland stewardship through a certification label on beef products.

MDC staff provide technical assistance to interested landowners, helping them manage their grazing lands while also benefiting declining grassland songbirds.

University of Missouri Extension livestock specialists conduct native grass workshops and develop grazing demonstrations that incorporate native grasses into a grazing rotation. In partnership with NRCS, MFA and Quail Forever have hired grazing specialists who work directly with cattle producers in target locations to incorporate native grass into a grazing system. This focused effort will help Missouri cattle producers meet their production objectives as well as benefit the natural resources of Missouri.

PRIORITY GEOGRAPHIES

Missouri River Hills, an area of about 45,000 acres in Montgomery and Warren counties, was selected as a priority geography for the department based on long-term planning, strategies, and support from our partners.

Missouri River Hills, one of nine priority geographies, is the largest continuous block of forest and woodlands north of the Missouri River. It supports 16 bird species identified as high priority by Partners in Flight and six species of conservation concern, including the ringed salamander, wood frog, blacknose shiner, and prairie dandelion. Only 6,000 acres of the geography is public land, so connecting with private landowners is critical to the success of our efforts.

Over the last year, MDC staff worked on over 1,300 acres in the Missouri River Hills area. That work included prescribed burns, invasive species control, forest management, and conversion of cropland to prairie plantings. Stream banks along several creeks were inventoried and assessed for erosion. MDC also worked with the Quail and Upland Wildlife Federation to identify potential grouse habitat and develop grouse stocking plans for interested landowners.

Staff held prescribed burn and land management workshops, partnered with private landowners to make landscape enhancements, and allocated cost-share funds for timber stand improvement, temporary forest openings, old field restoration, and prescribed burns. They even held a field day for Montgomery County high school students to explore Danville Conservation Area and learn about forest, woodland, glade, and stream habitats.



Prescribed fire, field restoration, and public engagement make a difference in the Missouri River Hills.



MDC Maintains Public Trust

We want you to be confident the finances dedicated to Missouri conservation are used wisely, and that decisions concerning Missouri's fish, forests, and wildlife are guided by the best available science.

PUBLIC INPUT FOR PERMIT PROPOSAL

In August, the Missouri Conservation Commission approved several changes to hunting and fishing permit prices, the majority of which had not changed since 1999.

The permit price increases will allow MDC to keep up with increasing costs of providing conservation work and services around the state.

MDC has largely dealt with decades of rising costs through budget adjustments, employee reduction and reassignment, and process analyses to improve efficiency. MDC reviewed its permit structure in 2008 and again in 2016, and determined the need to adjust permit prices and to initiate other changes (i.e., no-cost landowner hunting privileges and permits) to reflect the increase in operation costs, including the cost of fraud and misuse of no-cost hunting permits.

Part of that process was public and partner input. MDC polled the public in 2008 concerning no-cost landowner deer and turkey permits and repeated the survey in March 2019, with over 14,000 comments collected.

The Rising Price of Conservation

Prior to the Missouri Conservation Commission's vote in August 2019 to adjust many permit prices, revenue was failing to keep up with the cost of maintaining MDC's conservation areas, fish hatcheries, and nature centers.

For example, between 2003 and 2017, the cost of planting sunflowers for dove field management rose from \$100 per acre to \$250 per acre.

Similarly, the cost of raising and releasing trout — a sport that draws thousands of anglers to Missouri's trout parks and streams annually — also increased significantly since the last time related permit prices were adjusted. MDC releases about 1.7 million trout around the state for public fishing each year.

Price per
fish to raise
in a hatchery

\$1.72

in 2017



\$1.06

in 1999

SHOAL CREEK

MDC's Shoal Creek Conservation Education Center celebrated its opening with an open house on Sept. 6. MDC took ownership of the facility, formerly known as the Wildcat Glades Conservation and Audubon Center, in 2018 and began a substantial renovation of the building and the surrounding grounds. Trails on the grounds surrounding Shoal Creek connect with trails maintained by the City of Joplin and are open every day from sunrise to sunset. The Wildcat Glades Friends Group operates a redesigned gift shop and the group's executive director also has an office on-site.



Shoal Creek Center Hours

Tuesday–Friday:
9 a.m.–5 p.m.

Saturday:
10 a.m.–3 p.m.

*The building is closed
Sunday, Monday, and
all state holidays.*



Shoal Creek

AUTORENEWAL

MDC launched a new online auto renewal service. It allows online permit buyers to automatically renew permits prior to the start of the next season or permit year. Participation is voluntary and is activated by the permit buyer. There are no additional fees for the service. The auto renewal service sends personalized emails to participants of upcoming renewals and notifications of successful renewals and associated charges. Learn more at short.mdc.mo.gov/ZfF.



Conservation agents respond to swift water rescues

FLOOD RESPONSE

The spring weather in 2019 produced severe thunderstorms with unusually heavy rainfall across much of Missouri. Unfortunately, the combination of the sustained rainfall and saturated ground resulted in very dangerous and record-breaking flooding in some areas.

Many conservation areas were flooded. Levees on many areas were overtopped and some breached. Staff worked to move any infrastructure they could to higher ground before the flood waters reached the areas. Areas like Columbia Bottom and Bob Brown were under water through most, if not all, of the growing season, so the areas' vegetation, roads, and parking lots were heavily damaged. Even areas that did not flood, like Otter Slough CA, still experienced an exceptionally wet spring, reducing the number of acres of food plots planted and work completed on moist soil acres. As water recedes, MDC is assessing the damage and prioritizing the work needed to repair infrastructure and habitats.

Conservation agents, who receive specialized training and equipment to respond to swift-water situations and other natural disasters, responded to 65 flood-related requests for emergency assistance from May 10–June 26.

These calls for assistance included 42 separate swift-water rescue operations, during which agents joined with other emergency responders in saving 36 individuals from floodwaters, assisting with five flood evacuation operations, locating four submerged vehicles in flooded areas using side-scan sonar, and assisting with four body recoveries from the floodwaters.

MO OUTDOORS

Enjoying outdoor activities got a little easier thanks to MO Outdoors, MDC's free app. MO Outdoors users can quickly find MDC offerings close to home, work, or even when traveling based on preferred activities.

MO Outdoors helps users find conservation areas, fishing accesses, hiking trails, shooting ranges, and nature centers around the state based on specified outdoor activities, including birdwatching, camping, fishing, hiking, hunting, or shooting. Users can mark favorite locations to find them again quickly during future searches.

MO Outdoors also connects users to area regulations and season information, hours of operation, images, area closings, and interactive maps of area boundaries and features. The map function displays features such as parking lots, boat ramps, and wildlife viewing areas, and allows users to easily navigate to the features using their device's GPS. Users can also download maps for offline use.

Since its release in December 2018, MO Outdoors has been downloaded 36,390 times. The free app is available for download through Google Play for Android or the App Store for Apple.



VOLUNTEER ACCOMPLISHMENTS

The work of MDC is multiplied by the dedicated corps of volunteers statewide who share MDC's passion for protecting Missouri's fish, forest, and wildlife resources.



Volunteers by the Numbers

100 shooting range volunteers

209 fishing education volunteers

663 hunter/bowhunter education volunteers

413 nature center and interpretive site volunteers

39 protection volunteers

2,690 members of the Missouri Forestkeepers Network



Missouri Stream Teams provide a great service statewide. Stream Team contributions for FY19 include:

4,780 Stream Teams statewide

110,049 volunteer hours

718 water quality monitoring trips

231 tons of trash removed

1,827 trees planted



SECOND ANNUAL MISSOURI CONSERVATION PARTNERS ROUNDTABLE

MDC hosted its second annual Missouri Conservation Partners Roundtable in Columbia in October 2018. This event brought together more than 200 conservation partners, college students, and MDC staff with a purpose of establishing and strengthening new and existing partnerships through information sharing and listening. Small groups generated ideas for how to better connect health with nature. Nine concurrent sessions were held on topics ranging from bear research to community conservation. The event concluded with a question and answer session with MDC leadership.

Missouri also benefits from the Master Naturalist program.



12 Master Naturalist chapters

68,500 hours of volunteer service in 2018

\$1.89 million economic value



Get Outside

in JANUARY

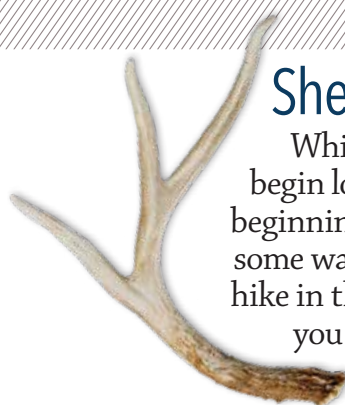
→ Ways to connect with nature



Carolina chickadee

Call of the Chickadees

Listen for chickadees as they feast tree side, using their tweezerlike bills to pull insects from crevices in tree bark.



Shed Hunting

White-tailed bucks begin losing their antlers beginning this month. Grab some warm gear and take a hike in the woods and see if you can find some.

Cure for Cabin Fever

Feeling cooped up and stir crazy this winter? We have a cure for that. Check out an **MDC nature center** to hike trails, explore exhibits, and enjoy nature programs. Visit short.mdc.mo.gov/Zpg to find a nature center near you.

Conservation nature centers



- 1 Cape Girardeau
- 2 Runge
- 3 Springfield
- 4 Powder Valley
- 5 Burr Oak Woods
- 6 Twin Pines
- 7 Discovery Center
- 8 Shoal Creek

KANSAS CITY REGION

Bird in the Hand

Saturday, Jan. 4 • 11 a.m.-2 p.m.

Burr Oak Woods Conservation Nature Center
1401 NW Park Road, Blue Springs, MO 64015

No registration required. Call 816-228-3766 for more information.

All ages

Missouri River Bird Observatory staff and Burr Oak Woods CNC partner in an on-going project to identify and track birds that come to our feeders each winter. From the resident chickadees and cardinals to the migrating juncos and sparrows, we capture, apply colored bands, and release these fascinating creatures. Once banded and recorded, you will be able to track individual birds through this and future seasons. This program is weather permitting.



Northern cardinal

Natural Events to See This Month

Here's what's going on in the natural world.



Eastern moles are active in tunnels deep underground



Horned larks flock in open fields



Long-tailed weasels may turn white or pale brown

ST. LOUIS REGION

Winter in the Woods Festival

Saturday, Feb. 1 • 10 a.m.–4 p.m.

Rockwoods Reservation, 2751 Glencoe Road, Wildwood, MO 63038
No registration required. For more information, call 636-458-2236.

All ages

Just because the temperatures drop, doesn't mean you have to stay inside! MDC and local partnering organizations will help uncover the many different outdoor activities you can do in winter, like maple sugaring, hiking, camping, bird-watching, outdoor photography, and fishing to name a few, along with information about how animals weather the season. Only handicapped parking will be available on-site. All other parking will be off-site at the St. Louis Community College Wildwood campus and Pond Elementary. Shuttle buses to the event will be provided, and food trucks will be available on-site. This is a rain or shine event, so please dress for the weather.



Signs of Spring?

A few warm days is enough for **Ozark witch-hazel** to begin blooming. The slight rise in temperature might also bring out mourning cloak and comma butterflies.



Mourning cloak butterfly



Comma butterfly

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Places to Go

NORTHWEST REGION

Bilby Ranch Lake Conservation Area

Pheasant hunting, ice fishing, and more

by Larry Archer

✳ At the turn of the 20th century, northwest Missouri's 5,100-acre Bilby Ranch Lake Conservation Area (CA) was part of one of the nation's largest livestock operations. When purchased by MDC in 1987, the area was primarily row crops. It now boasts a different distinction.

"It is probably the premiere pheasant hunting destination in Missouri," said Bilby Ranch Lake CA Manager Craig Crisler. "If you're an upland bird hunter, it's a place you've got to go at least once."

Not only is the area a destination for upland bird hunting, its ample grasslands make it an ideal spot for birdwatching as well, Crisler said.

"You'll see birds there that you don't typically see a lot of in Missouri, except for the western part of the state around some of the bigger grasslands," he said.

In addition to the 110-acre lake that gives the area its name, 17 smaller ponds dot the landscape, providing additional year-round fishing opportunities, he said.

"Since they are ponds, they freeze up pretty readily," Crisler said. "So, it's not uncommon to go by one of the ponds this time of year and there will probably be a lot of people ice fishing."



Short-eared owl

"If you were blindfolded and dropped in there, you'd think you were somewhere in western Kansas, Nebraska, or the Dakotas."

—Bilby Ranch Lake CA Manager
Craig Crisler

DAVID STONNER



BILBY RANCH LAKE CONSERVATION AREA

consists of 5,110 acres in Nodaway County.
From Maryville, take Highway 46 west 14 miles
to the area.

N40° 20' 0.96" | W95° 8' 36.96"

short.mdc.mo.gov/ZAA 816-271-3100

WHAT TO DO WHEN YOU VISIT



Birdwatching The eBird list of birds recorded at Bilby Ranch Lake CA is available at short.mdc.mo.gov/ZAK.



Camping Designated campsites. Campground with gravel pads.



Fishing Black bass, catfish, crappie, sunfish, walleye/sauger



Hunting Deer

Deer regulations are subject to annual changes. Please refer to the 2019 Fall Deer and Turkey booklet for current regulations.

Also **dove, pheasant, quail** and **rabbit**



Trapping Special use permit required.



Waterfowl Hunting

Open hunting. Waterfowl regulations are subject to annual change. Please refer to the *Migratory Bird and Waterfowl Hunting Digest 2019-2020* for current regulations.

WHAT TO LOOK FOR WHEN YOU VISIT



Mink



Northern shoveler



Muskrat



Beaver



Watercress

Nasturtium officinale

Status	Size	Distribution
Common	Up to 10 inches high	Southern and central Missouri



Did You Know?

Watercress is part of the mustard family. In fact, "cress" is used for a variety of edible, peppery plants in the mustard family. Watercress has a tangy flavor and is used as a salad green. Collect it in the wild from reputable sources, but wash it thoroughly before eating it.

Most common in and around the cold waters of springs and spring branches, watercress is also found in fens, marshes, and ditches. Botanists have long pondered its origins. For a long time, people pointed to watercress's presence at remote spring branches as evidence that it is native. However, those locations were not as pristine as formerly believed. Today most agree that it is in fact an old-world species that was introduced to North America.



LIFE CYCLE

Watercress is a perennial aquatic plant that grows even during the winter submerged in, floating on, or emerging from water. It is a lush green plant, often forming bushy colonies. Its flowers, small and white, bloom between April and October.



ECOSYSTEM CONNECTIONS

Humans are not the only ones to eat watercress. Fish, birds, and mammals nibble its greens, as do numerous aquatic insects, snails, and more. It often hosts masses of aphids.

Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖



Free MO Hunting and MO Fishing Apps

MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at short.mdc.mo.gov/Zi2.

FISHING

Black Bass

Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:
May 25, 2019–Feb. 29, 2020

Nongame Fish Giggling

Streams and Impounded Waters,
sunrise to midnight:
Sept. 15, 2019–Feb. 15, 2020

Trout Parks

Catch-and-Release:
Nov. 8, 2019–Feb. 10, 2020

TRAPPING

Beaver, Nutria

Nov. 15, 2019–March 31, 2020

Other Furbearers

Nov. 15, 2019–Jan. 31, 2020

Otters, Muskrats

Nov. 15, 2019–Feb. 20, 2020

Rabbits

Nov. 15, 2019–Jan. 31, 2020

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Zib. Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at short.mdc.mo.gov/ZZf.

HUNTING

Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.

Open all year

Crow

Nov. 1, 2019–March 3, 2020

Deer

Archery:
Nov. 27, 2019–Jan. 15, 2020

Firearms:

- ▶ Alternative Methods Portion:
Dec. 28, 2019–Jan. 7, 2020

Other Furbearers

Nov. 15, 2019–Jan. 31, 2020

Pheasant

Regular:
Nov. 1, 2019–Jan. 15, 2020

Quail

Regular:
Nov. 1, 2019–Jan. 15, 2020

Rabbit

Oct. 1, 2019–Feb. 15, 2020

Squirrel

May 25, 2019–Feb. 15, 2020

Turkey

Archery:
Nov. 27, 2019–Jan. 15, 2020

Waterfowl

See the Waterfowl Hunting Digest or visit short.mdc.mo.gov/ZZx for more information.

MDC Waterfowl Workshops

We invite waterfowl hunters to public workshops during January, February, and March to give input about duck season dates and zone boundary locations for the 2021–2025 seasons. The workshops will be from 7–9 p.m. and no reservations are necessary. For more information on dates, locations, and other details, visit us online at short.mdc.mo.gov/Zq8.



ILLUSTRATION: MARK RAITHEL



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It may be cold outside. There may even be a little — or a lot — of snow on the ground, depending on your location. But that's no reason to stay indoors! Like this little mouse, get out of your nest and peek outside. You never know what you will discover.

📷 by **Noppadol Paothong**